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An Intelligence Assessment

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An Intelligence Assessment

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Office of Global Issues. Comments and queries are welcome and may be directed to the Chief, Geography Division, OGI 25X1

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Lebanon's Litani River: A Potential Water Source for Israel? [redacted]

Key Judgments
Lebanese and other Arab government leaders have renewed charges that Israel has begun work on a project to divert water from Lebanon's Nahr al Litani (Litani River) into Israel. The claims have been denied by Israeli officials [redacted]. The Lebanese, nonetheless, have reason for concern. Israeli water planners and political leaders have admitted to developing contingency plans for a Litani diversion and to carrying out site surveys along a possible diversion route. While openly admitting to these plans, the Israelis claim they would not act unilaterally; they say that any water diversion projects would entail some compensation for the water used by Israel. [redacted]

Israeli proponents of a Litani diversion maintain that Lebanon does not need all the Litani water and emphasize that Israel is facing an increasing water shortage. Israeli officials have stated that from 50 million cubic meters (mcm) to 500 mcm of the Litani's 700-mcm annual flow is unused in Lebanon and, therefore, could be used by Israel. Lebanese officials claim that the entire river flow would be used within Lebanon if political conditions stabilized and proposed water projects could be completed. [redacted]

Both arguments have some merit. During full operation of Lebanese hydropower systems, most of the Litani waterflow would be diverted from the river via a tunnel, leaving little for use by Israel. These water systems, however, have seldom been operated at full capacity. Until Lebanon is able to use the residual flow, the excess water will continue to attract the attention of Israelis who are concerned about limited supplies within Israel. We believe that the attraction of Litani River water will remain a significant factor influencing Israel's military and political decisions regarding its presence in southern Lebanon. [redacted]

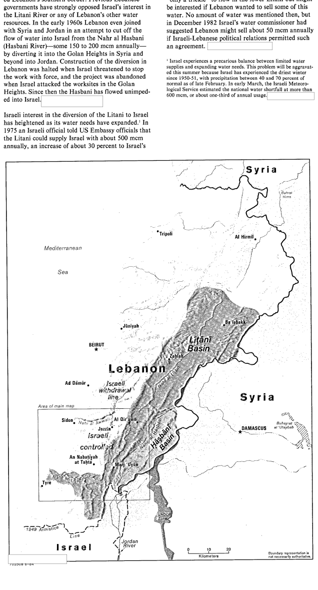
Israeli Interest in the Litani
Proposals to divert Lebanon's Litani River southward have been a recurrent theme in water-short Israel and a source of apprehension to Lebanon. Even before the creation of the Palestine Mandate, early Zionist planners tried unsuccessfully to get the British to place the Litani within Palestine when they demarcated Lebanon's southern border. Previous Lebanese governments have strongly opposed Israel's interest in the Litani River or any of Lebanon's other water resources. In the early 1960s Lebanon even joined with Syria and Jordan in an attempt to cut off the flow of water into Israel from the Nahr al Hasbani (Hasbani River)—some 150 to 200 mcm annually—by diverting it into the Golan Heights in Syria and beyond into Jordan. Construction of the diversion in Lebanon was halted when Israel threatened to stop the work with force, and the project was abandoned when Israel attacked the worksites in the Golan Heights. Since then the Hasbani has flowed unimpeded into Israel. [redacted]

Israeli interest in the diversion of the Litani to Israel has heightened as its water needs have expanded.[1] In 1975 an Israeli official told US Embassy officials that the Litani could supply Israel with about 500 mcm annually, an increase of about 30 percent to Israel's water supply. A unilateral diversion of this magnitude—more than 70 percent of the Litani's water—would require Israeli control over the river and the reservoir at Al Qir'awn. The most frequently mentioned route for a water diversion into Israel would begin near the Litani's westward bend. From this location, only a 5-kilometer tunnel would be required to reach the Israeli water system. Alternatively, to tap the larger flow near the river's mouth, a canal could be constructed along the coastal plain leading southward past Tyre into Israel. [redacted]

Since Israel gained control over a narrow strip of southern Lebanon in 1978, numerous Lebanese and other Arab government officials have become even more suspicious of Israel's designs on the Litani. Many Arabs believe that control of the Litani was a principal reason for the Israeli invasion in June 1982 and that Israeli water diversions have already begun. In December 1982 the chairman of the Lebanese Litani River Authority said that some diversion was already under way and that a tunnel from the Litani into Israel could be completed in one year. In April 1984 Lebanese media and politicians drew wide attention to an article published by a Lebanese economist who claimed that Israel had completed a large part of the work on a project to divert 150 mcm of Litani water to Israel annually. According to the economist, Israel has dug a tunnel from the Jisr al Khardali (Khardali Bridge) above the big bend on the Litani to Tall an Nahas on the Israeli border and from there to Lake Tiberias. Israeli officials immediately denied the allegations, and, on 21 May, according to Beirut radio, the Litani River Authority reported that no diversion of Litani River waters was taking place. [redacted]

A number of Israeli statements and actions have heightened Lebanese suspicions. According to the chairman of the Litani River Authority, one of the Israelis' first actions when they arrived at the Buhayrat al Qir'awn (Qir'awn Reservoir) in June 1982 was to seize all the hydrological charts and technical data on the dam and river. This story was confirmed in 1983 by Yuval Neeman, an Israeli Cabinet Minister, who also admitted in an interview cited in *The Washington Post* that Israel had carried out surveys and borings for a possible tunnel. Neeman claimed that Israel had shelved plans for diverting the Litani because Lebanon's upstream water use caused "only a trickle" to flow in the lower Litani but might be interested if Lebanon wanted to sell some of this water. No amount of water was mentioned then, but in December 1982 Israel's water commissioner had suggested Lebanon might sell about 50 mcm annually if Israeli-Lebanese political relations permitted such an agreement. [redacted]

[1] Israel experiences a precarious balance between limited water supplies and expanding water needs. This problem will be aggravated this summer because Israel has experienced the driest winter since 1950-51, with precipitation between 40 and 70 percent of normal as of late February. In early March, the Israeli Meteorological Service estimated the national water shortfall at more than 600 mcm, or about one-third of annual usage. [redacted]



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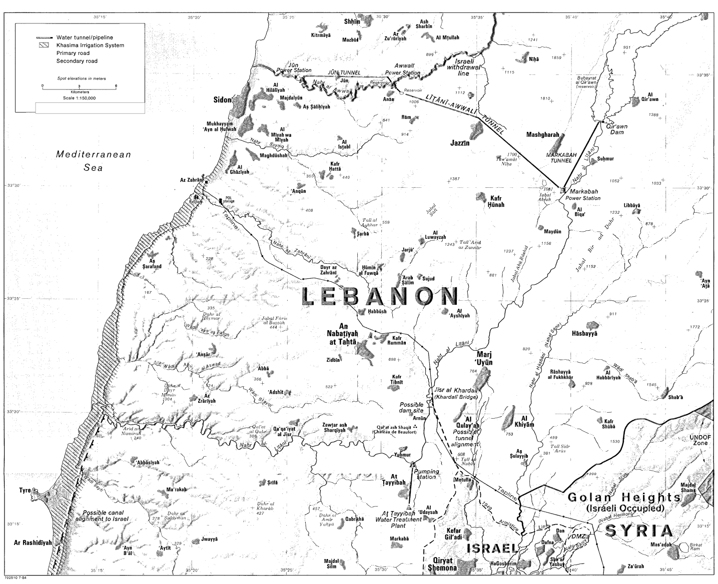

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No Evidence of Israeli Diversion
Evidence available to the end of May 1984 does not support Lebanese claims that Israel has unilaterally begun work on a large-scale Litani diversion project. A tunnel from the Litani, such as described in several Lebanese reports, would require extensive excavation and support facilities. Likewise, a pipeline large enough to carry 50 mcm of water would be at least several feet in diameter and would require a large pumping station and a small dam or weir on the river. All of these facilities would be discernible on imagery, and none is shown on imagery through 31 May 1984. Onsite reporting from the UN Interim Force in Lebanon (UNIFIL) supports the conclusions drawn from overhead imagery. Although UNIFIL teams cannot observe all locations along the Litani, a spokesman reported in May 1984 that UNIFIL officers were not aware of any Israeli water diversion project and pointed out that road construction near Khardali Bridge and Tall an Nahas might have been mistaken for water-related construction activity [redacted]

The Litani
Hydrology. The Litani—Lebanon's largest and best controlled river—drains the flat southern region of the Bekaa and portions of the hills and mountains of southern Lebanon. Its southward flow heads toward Israel but diverts westward about 3 kilometers from the boundary where the river is channeled through a narrow gorge to the Mediterranean. The average annual stream flow in the Litani is roughly 700 mcm, with high seasonal and annual variation. Usually, more than 60 percent of the flow occurs between January and April. May and June account for about 15 percent of the flow; 12 percent occurs during the usually rainless months of July through October; and 10 percent during November and December, when the rainy season usually begins. The upper basin—the Bekaa—provides about 325 mcm of the 700 mcm, the middle basin from above the Qir'awn Reservoir to the Litani's big bend adds 315 mcm, and the lower basin contributes 60 mcm. [redacted]

Year-to-year variations in the Litani waterflow are substantial. Precipitation is average in only about 20 percent of the years; most years are significantly drier or wetter than the statistical average. An occasional dry year does not cause serious losses because of a healthy water table. A string of dry years, however, such as in 1932-37 when river flow was estimated at less than 70 percent of average, would reduce the river to a trickle. A series of wet years occurs more frequently, but does not provide additional water needed for irrigation or power generation because reservoir capacity is insufficient to hold most of the excess water [redacted]

Litani River Projects. Water projects developed for southern Lebanon in the 1960s were designed to utilize fully Litani River water. Lebanese planning emphasized the production of electric power; irrigation was a secondary consideration. The principal projects depending on Litani water were a dam and reservoir at Al Qir'awn and two hydroelectric systems—one, a few kilometers below the Qir'awn Dam at Wadi Markabah, and the other at the end of a tunnel from the Litani to the Nahr al Awwali (Awwali River). The tunnel allows the diversion of most of the Litani's water into the Awwali, greatly increasing the potential for electric power production. Water from the tunnel serves two hydropower plants on the Awwali, at Anan and Jun [redacted]

In addition to the hydropower projects, several irrigation projects were designed to use water from the Litani. To increase irrigation in the Al Biqa' (Bekaa Valley), a pumping station has been installed at the Qir'awn Dam that is designed to pump as much as 50 mcm of reservoir water annually up to a canal to irrigate about 2,000 hectares just east and north of the reservoir. This southern Bekaa system has not been completed. Below Al Qir'awn, several irrigation projects have been studied in association with a proposed dam and reservoir near Khardali Bridge on the Litani. These projects anticipated greatly increased use of water for irrigation, including as much as 110 mcm per year for the relatively undeveloped farmlands in the hills around An Nabatiyah at Tahta. The Khardali Dam and most of the irrigation schemes below Al Qir'awn are in abeyance. Another project, irrigation of the Khasima area, was started in the 1940s and now consists of 6,000 hectares of mainly citrus orchards that receive their water from near the mouth of the Litani via gravity canals. [redacted]

Since the 1975-76 war, the Litani-Awwali hydropower system has operated well below capacity because much of the system has suffered from war-related damage, especially the power grid. Repair work has been partial and costly. Moreover, wholesale power theft and declines in industrial activity have forced large increases in rates and resulted in marketing difficulties for available electric power. During 1983 additional war damage to transmission facilities has further limited the production of electricity. As long as the facilities remain damaged, power generation requirements and the need for Litani River water will remain below capacity. Although we have little reporting on actual operations, we suspect the Litani-Awwali diversion system is operating at well below half its capacity. [redacted]

Litani Operations Under Israeli Occupation
The Israeli occupation forces have rarely interfered in the control of the Qir'awn Reservoir, which is the key to the Litani-Awwali hydrosystem. In the spring of 1983, following the high water season, the reservoir was nearly full, but continued to receive runoff from springs and melt water. By late May, the reservoir had reached its capacity of about 220 mcm. To ensure a full reservoir for the impending dry season, only small amounts of water were released, mainly to service the partial operations of the hydropower plants below the dam. [redacted]

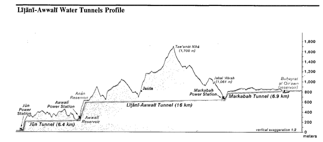
The only Israeli interference occurred in June when the Lebanese operators were forced to reduce the water level in the reservoir to prevent the flooding of a few buildings in an Israeli military camp on the eastern shore. Although the buildings were later moved to higher ground, the reservoir was drained continuously through the dry season. At the beginning of December, the reservoir contained about 60 mcm—the permissable low water level. Larger-than-normal quantities of water released from the Qir'awn Reservoir were allowed to flow into the Mediterranean; the hydropower station's requirements were reduced because of transmission line damage. Even if the water in the reservoir is not used during the low water season, it must be released to provide space for the anticipated heavy flows of the winter rainy season. In May 1984 the Qir'awn Reservoir was nearly full. [redacted]

Other Israeli water-related actions in southern Lebanon, although not directly related to the Litani issue, provide mixed signals on Israeli water policies for the area. According to a UN- and local Lebanese-sourced press report, Israeli military authorities prohibit Lebanese farmers from drilling new wells, presumably to conserve water in aquifers shared with Israel. At the same time, Israeli sources claim that since 1976 Israel has piped small quantities of its own water to several villages in Lebanon [redacted]

Prospects and Implications
The Lebanese Government will neither willingly give nor sell Lebanese water resources to Israel in the near future. Should Lebanon achieve political stability and receive sufficient foreign financial aid, we believe that the Lebanese eventually would be able to complete proposed development projects in the south and make full use of the Litani's water. To make full use of the Litani, Lebanon would have to rebuild the existing power distribution system and increase efforts to develop markets for all the existing hydropower potential of the Awwali system, build an additional storage dam for winter flood flows on the lower Litani, and, most important, develop new irrigation systems to increase the acreage under irrigation. As long as Israel continues to occupy southern Lebanon, however, its presence restrains Lebanon from completing any significant water development projects in the area. [redacted]

Israel could make full use of any Lebanese water that it can obtain, and Tel Aviv no doubt welcomes the continued Lebanese failure to fully exploit the river. While securing unused Litani water is only one of several Israeli interests in Lebanon, and we do not believe that Israel will undertake a unilateral diversion project in the near term, we believe that Litani water will continue to attract the attention of Israeli policymakers. If the Israelis do move to tap the Litani's flow, dislocating them will become extremely difficult. The Israelis probably would expect a large increase in US economic aid in return for relinquishing Litani water. [redacted]

Līṭānī-Awwalī Water Tunnels Profile



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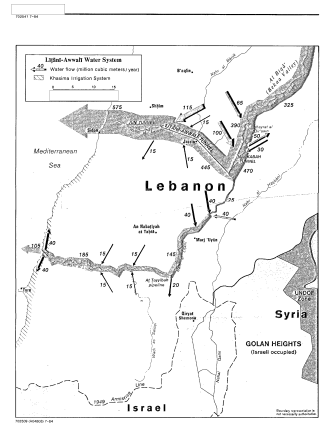

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Maximizing Litani Usage: A Hypothetical Case

If the Litani-Awwali hydrosystem were to operate at full capacity for an entire year, the average annual Litani waterflow at the Markabah Power Station would be about 470 mcm—340 mcm via the tunnel from the Qir'awn Dam and 130 mcm from the Litani tributaries below the dam. From Markabah Power Station, about 445 mcm would be sent through the Litani-Awwali Tunnel to service the power stations at Awwali and Jun. [redacted]

Below Markabah, the 25 mcm left in the Litani would blend with 120 mcm of inflow between Markabah and Khardali Bridge and 60 mcm of inflow between Khardali Bridge and the mouth of the river to yield an annual flow of 205 mcm. Approximately 100 mcm of this water is needed for the At Tayyibah Pumping Project and the Khasima Irrigation System. During such an average, hypothetical year, 105 mcm of the Litani's water would flow unused into the Mediterranean, almost entirely during winter and spring. The Lebanese Government has studied plans for an additional reservoir below Qir'awn Reservoir—probably at about 275 meters elevation near the main bend in the river—to store these surpluses for irrigation and domestic uses. A reservoir below Qir'awn Reservoir, however, would also increase the feasibility for Israeli diversion of the water to Israel. [redacted]

On the Awwali, the annual flow would reach 590 mcm, consisting of 445 mcm from the Litani-Awwali Tunnel, 30 mcm from ground water that enters the tunnel, and 115 mcm from upstream tributaries of the Awwali. The potential flow in the Awwali, below the hydropower stations, therefore, is much higher than in the lower Litani. Little of this water is used for irrigation before it flows into the Mediterranean. The Lebanese Government has proposed plans to use some of this Awwali water in a combined irrigation and water supply scheme for the Sidon-Beirut region. The hills above Sidon are to be watered from gravity systems linked to the reservoir at Anan, at the terminus of the Litani-Awwali Tunnel, where only small areas are irrigated at present. Water for Beirut is to be carried via a gravity flow tunnel that would begin upstream from the Jun Power Station. These projects also are in abeyance. [redacted]

Qir'awn Reservoir. *The reservoir was full in April 1984 and water is being released into the river. A pumping station below the dam pipes the water into the canal for use on farmlands just above the reservoir.* (S NF WN)